**Data Visualization with Python**

**Week 3**

**Waffle Charts:**

Waffle charts are a visualization technique that represents categorical data in the form of square tiles or cells.

These resemble a grid of equal-sized squares, with each square representing a specific value or category.

The size or color of the squares indicate the magnitude or proportion of each category.

Waffle charts effectively show the proportion or percentage of different categories within an overall composition.

The grid-like structure of waffle charts makes it easy to understand and interpret data even for nontechnical audiences.

**Usage of Waffle Charts:**

waffle charts are used for such use cases given below-

* market share analysis,
* demographic representation,
* project progress tracking,
* budget allocation,
* survey responses,
* election results, and
* product sales analysis.

**Word Cloud:**

Word cloud, also known as tag cloud or text cloud, is a popular data visualization method to visually present textual data in an engaging and informative manner.

It presents a concise summary of the textual content by providing a visual overview of the most commonly used words within a given text or collection of documents.

A word cloud is simply a depiction of the importance of different words in the body of text.

It works in a simple way; a word appears bigger and bolder in the word cloud depending on how many times it appears in a source of textual data.

**Usage of Word Cloud Chart:**

* social media analysis,
* customer feedback analysis,
* sentiment analysis
* content analysis,
* market research,
* resume or
* job description analysis

Word clouds (also known as text clouds or tag clouds) work in a simple way: the more a specific word appears in a source of textual data (such as a speech, blog post, or database), the bigger and bolder it appears in the word cloud.

**Seaborn Library for Visualization:**

Although Seaborn is another data visualization library, it's based on Matplotlib.

Seaborn offers a range of built-in themes and color palettes that improve the visual appeal of your plots with minimal effort.

Seaborn makes creating plots very efficient, therefore, with Seaborn, you can generate plots with code that is five times less than with Matplotlib.

Seaborn integrates well with statistical libraries such as NumPy and SciPy, allowing you to easily combine statistical analysis with visualizations.

It provides a higher level of interference with Pandas and Numpy for creating visually appealing and informative statistical graphics.

Seaborn works well, especially when dealing with more complex visualizations and statistical analyses.

**Why matplotlib inline is Used? The line magic command %matplotlib inline enables the drawing of matplotlib figures in the IPython environment. Once this command is executed in any cell, the matplotlib plots will appear directly below the cell in which the plot function was called for the rest of the session.**

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**Folium:**

Folium is a powerful data visualization library in Python that was built primarily to help people visualize geospatial data.

With Folium, you can create a map of any location in the world using latitude and longitude values.

You can also create a map and superimpose markers and clusters on top of the map for interesting visualizations.

You can also create maps of different styles, such as street level maps, stamen maps, and a couple of others, which we will look into in just a moment.

**Choropleth Maps:**

A choropleth map is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable displayed on the map. Such as population density or per capita income. The higher the measurement, the darker the color.

**Geospatial Map Metrics:**

Latitude and longitude are a pair of numbers (coordinates) used to describe a position on the plane of a geographic coordinate system. The numbers are in decimal degrees format and range from **-90 to 90** for latitude and **-180 to 180** for longitude.

For example, Washington DC has a latitude 38.8951 and longitude -77.0364 .

***Leaflet is an open source JavaScript library used to build web mapping applications. First released in 2011, it supports most mobile and desktop platforms, supporting HTML5 and CSS3. Among its users are FourSquare, Pinterest and Flickr.***

# Summary: Advanced Visualizations and Geospatial Data

Congratulations! You have completed this module. At this point in the course, you know:

* Folium is a data visualization library in Python that helps people visualize geospatial data.
* With Folium, you can create maps of different styles, such as street-level maps, stamen maps, and more.
* A feature of Folium is that you can create different map styles using the tiles parameter.
* With Folium, you can easily add markers on maps.
* The ‘location’ parameter specifies the latitude and longitude coordinates of the center point of the map.
* Markers play a vital role in enhancing interactivity and adding context to maps.
* The folium.Marker() function specifies location parameters.
* The popup parameter provides a label upon being clicked.
* Markers can be created using “feature group.”
* A choropleth map is a thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable.
* When creating a choropleth map, Folium requires a GeoJson file that includes geospatial data of the region.
* The Mapbox Bright Tileset displays the name of every country when used on a map.